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Patent Claims

1. Endoscope (2) with hygiene protection (1), which comprises
   - a cover (4),
     - which is closed at the distal end (3) thereof and is transmissible for optical information at least at its front face, and
     - can be rolled on in the manner of a condom in the axial direction of the endoscope (2), and
   - consists of one or more working channels (6a to 6b) which extend parallel to the endoscope (2) and terminate in an open manner at the distal end (3) of the cover (4),
   - the working channels (6a to 6b) being only connected to the distal end (3) of the cover (1), and
   - the working channels (6a to 6b) being positioned between the outer side of the endoscope (2) and the inside of the cover (4).

characterised in that

- in addition to the working channels (6a to 6b), one or more vacuum channels (7) with one or more openings, which terminate at the inside of the cover (4), which faces the endoscope (2), are provided.

Hygiene Protection for Endoscopes

The invention relates to an endoscope with hygiene protection, which consists of a cover which is closed at the distal end thereof and which is transmissible for optical information at least on the front face thereof and which can be rolled on in the manner of a condom in the axial direction of the endoscope and which consists of one or more working channels, which extend parallel to the endoscope and terminate in an open manner at the distal end of the cover, the working channels only being connected to the distal end of the cover, and the working channels being positioned between the outside of the endoscope and the inside of the cover. The invention further relates to a method for applying an elastic endoscope protection intended for one-off use.

Endoscopy is a diagnostic method for investigating body cavities and ducts and hollow viscera by direct observation by means of an endoscope. New designs of endoscopes consist of a flexible tube, in the interior of which glass fibre bundles run. The optical information from the body interior is transmitted through the glass fibres. Other endoscopes have a CCD image-converter chip, which acts as a miniaturised TV camera and makes possible output on a monitor. By means of endoscopy, tissue portions can be removed for biopsy by means of introducible forceps, loops, irrigators and suction apparatus, and relatively minor operations carried out.

Since endoscopes are very expensive items of equipment, it is necessary to use them as frequently as possible to achieve a payback. To avoid contamination, unprotected endoscopes are dismantled after each use and thoroughly cleaned. The cleaning procedure includes intensive mechanical cleansing, e.g. by brushes and the use of an ultrasonic bath. The channels extending

in the interior of the endoscope are flushed after immersion in a disinfection solution by means of a pump.

Document 1 (US-A-4 646 722) describes an endoscope protection that consists of an elastic material and, starting from the distal end, can be rolled on on the outside of the endoscope in the manner of a condom. The cover is transmissible for optical information at least at its front face, and has working channels that terminate in an open manner in this region. After fixing of the endoscope protection on the endoscope, the working channels lie between the outside of the endoscope and the inside of the cover and are fixed by the latter.

Document 2 (WO 94 05200) discloses an endoscope that permits the detachable fastening of an independent channel unit at the distal end. The channel unit consists of an end piece that is fastened, for example by means of a dovetail profile, to a depression at the distal end of the endoscope which is of complementary shape to the dovetail profile The openings of the working and biopsy channels are located at the distal end of the channel unit into which they are inserted. After leaving the channel unit, the working and biopsy channels run parallel to the endoscopy tube. An additional fastening, in particular by a condom-like protection of rubber which surrounds the endoscope and the channel unit and can be rolled on, is not provided for.

Document D3 (DE 199 18 488 A1) describes a disposable endoscopy protection, which encloses the endoscope as a liquid-tight cover and has a window at the distal end that is transparent for optical information, optical contact between the window of the cover and the optical channel of the endoscope is improved by introducing a transparent liquid.

Against this background, it is the object of the invention to design a hygiene protection which can be rapidly and easily fixed and consists of one or more working channels, for one-off or repeated use for endoscopes, expansion of the endoscope diameter being

largely or entirely avoided.

To achieve this object, a hygiene protection is proposed, which is characterised in that, besides the working channels, one or more vacuum channels with one or more openings are provided which are provided on the inside of the envelope which faces the endoscope.

Summary

Endoscope with hygiene protection which consists of a cover which is closed at the distal end thereof and is transmissible for optical information at least on its front side and which can be rolled on in the manner of a condom in the direction of the axis of the endoscope and which consists of one or more working channels which extend parallel to the endoscope and terminate in an open manner at the distal end of the cover, the working channels only being connected to the distal end of the cover, and the working channels being positioned between the outside of the endoscope and the inside of the cover, besides the working channels one or more vacuum channels with one or more openings, which terminate at that side of the cover facing away from the patient, being provided,